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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,840	11/19/2003	Minoru Oogushi	ASAM.0093	3616
7590 REED SMITH LLP Suite 1400 3110 Fairview Park Drive Falls Church, VA 22042			EXAMINER CHU, WUTCHUNG	
			ART UNIT 2616	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/715,840

Applicant(s)

OOGUSHI, MINORU

Examiner

Wutchung Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-18 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/19/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claim 2 is objected to because of the following informalities: claim 1 line 4 and claim 2 line 4 are unclear and the words are cut off at the end of the lines. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 18 line 5, the term "the terminal" has no antecedent basis.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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6. Claims 1-8, 10-12, 14, 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Miki et al. (US2007/0110060).

Regarding claim 1, Miki et al. disclose packet switching apparatus comprising:

- a plurality of communication I/Fs to transmit and receive packets (**see paragraph 41 line 7-8**);
- a plurality of first logical interfaces associated with the communication I/Fs to transmit and receive packets to and from user terminals (**see paragraph 41 line 36**);
- a plurality of second logical interfaces associated with the communication I/Fs to transmit and receive packets to and from backbone networks (**see paragraph 41 line 36**);
- routing information tables managed by virtual routers and storing routing information (**see paragraph 42 line 1**); and
- a means to associate one of the virtual routers to one of the first logical interfaces and to one of the second logical interfaces (**see paragraph 41 line 40**);
- wherein packets received from the first logical interface are forwarded to one of the second logical interfaces associated with the virtual router according to the routing information table corresponding to the virtual router associated with the first logical interface (**see paragraph 42 line 1-18**);

Regarding claim 2, Miki et al. teaches further comprising:

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a L2TP LAC function (**see paragraph 40 line 16**);

wherein a communication I/F to transmit and receive one of PPP frames assigned among the communication I/Fs (**see paragraph 41 line 27**) or a logical interface corresponding to one of PPP sessions is the first logical interface (**see paragraph 43 line 3-12**);

wherein an interface to transmit and receive L2TP packets is the second interface (**see paragraph 40 line 15 and paragraph 44 line 6**);

wherein the L2TP LAC function operates in each of the virtual routers (**see paragraph 40 line 16**).

Regarding claim 3, Miki et al. teaches further comprising:

a L2TP LAC function (**see paragraph 40 line 16**); and

a function to terminate a plurality of L2TP tunnels (**see figure 10 tunnel TL 11—14 and paragraph 24 line 2**);

wherein a logical interface corresponding to one of the L2TP tunnels is the first logical interface (**see paragraph 44 line 7**);

wherein an interface to transmit and receive L2TP packets is the second logical interface (**see paragraph 44 line 7**);

wherein the L2TP LAC function associates each of PPP sessions from a user terminal with the corresponding first logical interface (**see paragraph 43 line 3-12**).

Regarding claim 4, Miki et al. teaches further comprising:

a L2TP LNS function (**see paragraph 39 line 17**);

wherein a communication I/F to transmit and receive L2TP packets assigned among the plurality of communication I/Fs (**see figure 10 tunnel TL 11—14 and paragraph 24 line 2**) or a logical interface corresponding to one of L2TP tunnels is the first logical interface (**see figure 10 tunnel TL 11—14 and paragraph 24 line 2**);

wherein an interface to transmit and receive packets to and from backbone networks is the second interface (**see paragraph 43 line 12**);

wherein the L2TP LNS function operates in each of the virtual routers (**see paragraph 39 line 17**).

Regarding claim 5, Miki et al. teaches further comprising:

a L2TP LNS function (**see paragraph 39 line 17**);

wherein a logical interface corresponding to one of received PPP sessions is the first logical interface (**see paragraph 41 line 27**);

wherein an interface to transmit and receive IP packets to and from backbone networks is the second logical interface (**see paragraph 41 line 27**);

wherein the L2TP LNS function associates each of the PPP sessions multiplexed to a L2TP tunnel with the corresponding first logical interface (**see paragraph 41 line 33**).

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Regarding claim 6, Miki et al. teaches the association means is realized by one of the virtual routers **(see paragraph 54 line 25)**.

Regarding claim 7, Miki et al. teaches a correspondence between the first logical interfaces and the virtual routers and the correspondence between the second logical interfaces and the virtual routers can be changed by a control command received by one of the communication I/Fs **(see paragraph 51 line 9 and it is inherent that control command is received by one of the communication I/Fs)**.

Regarding claim 8, Miki et al. disclose packet switching apparatus comprising:

- a plurality of communication I/Fs to connect to external communication lines packets **(see paragraph 41 line 7-8)**;
- a processor to execute predetermined processing on packets transmitted and received through the terminal **(see figure 2 box 13n input session processing unit and box 14n output session processing unit)**; and
- a memory to store reference information used to execute predetermined processing on received packets **(see paragraph 42 line 1 retains a table and paragraph 43 retains a table)**;
- wherein the memory stores: physical interface identifiers or logical interface identifiers of the received packets and an interface table holding a relation between the interface identifiers and virtual router identifiers **(see paragraph 42 and paragraph 43 and figure 3 and 4)**; and

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- a routing information table holding routing information to be processed by routers corresponding to the virtual router identifiers (**see figure 3 and 4**);
- wherein the processor refers to the interface table and identifies an identifier of a virtual router that is to process the received packets (**see paragraph 41 line 30-46**) and
- reads from the routing information table routing information managed by the virtual router corresponding to the virtual router identifier and forwards the received packets (**see paragraph 41 line 30-46**).

Regarding claim 10, Miki et al. teaches L2TP tunnel identifiers (**see paragraph 42 line 9**), PPP session identifiers (**see paragraph 42 line 10**) or identifiers of Internet service providers connected through external communication lines are used as the logical interface identifiers (**see paragraph 41 line 21-25**).

Regarding claim 11, Miki et al. teaches port numbers of the plurality of communication I/Fs (**see paragraph 41 line 21**) are used as the physical interface identifiers (**see paragraph 42 line 9**).

Regarding claim 12, Miki et al. teaches further comprising a LAC function or LNS function (**see paragraph 41 line 2**).

Regarding claim 14, Miki et al. teaches further comprising a means for switching between the LAC function and the LNS function (**see paragraph 40 line 15-17**).

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Regarding claim 16, Miki et al. teaches further comprising:

- a program memory storing a program, the program being intended to analyze contents of management control commands received by the communication I/Fs (**see figure 2 box 13n input session processing unit and box 14n output session processing unit it is inherent that processing unit is run by a program**);
- wherein the processor executes the management control commands to authorize, according to a contract, control command sources to change settings in the interface tables corresponding to all the virtual routers (**see paragraph 51 line 2-5**).

Regarding claim 17, Miki et al. teaches the processor executes the management control commands to authorize a particular control command source to change settings in the interface table corresponding to a particular virtual router (**see paragraph 51 line 6-15**).

Regarding claim 18, Miki et al. disclose packet switching apparatus comprising:

- a plurality of communication I/Fs to connect to external communication lines (**see paragraph 41 line 7-8**);
- a processor to execute predetermined processing on packets transmitted and received through the terminal (**see figure 2 box 13n input session processing unit and box 14n output session processing unit**); and

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- a memory to store reference information used to execute predetermined processing on received packets (**see paragraph 42 line 1 retains a table and paragraph 43 retains a table**);
- wherein the memory stores; physical interface identifiers or logical interface identifiers of the received packets and an interface table holding a relation between the interface identifiers and virtual router identifiers (**see paragraph 42 and paragraph 43 and figure 3 and 4**); and
- a routing information table holding routing information to be processed by routers corresponding to the virtual router identifiers (**see figure 3 and 4**);
- wherein the processor refers to the interface table and identifies an identifier of a virtual router that is to process the received packets (**see paragraph 41 line 30-46**) and
- reads from the routing information table routing information managed by the virtual router corresponding to the virtual router identifier and forwards the received packets (**see paragraph 41 line 30-46**);
- a program memory storing a program, the program being intended to analyze contents of management control commands received by the communication I/Fs (**see figure 2 box 13n input session processing unit and box 14n output session processing unit it is inherent that processing unit is executed by a program**);

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- wherein the processor executes the management control commands to authorize, according to a contract, control command sources to change setting in the interface tables corresponding to all the virtual routers (**see paragraph 51 line 2-5**),
- wherein the processor executes the management control commands to authorize a particular control command source to change settings in the interface table corresponding to a particular virtual router (**see paragraph 51 line 2-5**);
- wherein a communication carrier who owns or manages the virtual access routers associates interfaces connecting to networks of other communication carriers with particular virtual routers (**see paragraph 41 line 21-25**) and transfers to the other communication carriers authorities to use management control commands corresponding to the virtual routers (**see paragraph 51 line 2-5**).

Claim Rejections - 35 USC § 103

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miki et al. in view of Forslow (US2002/0133534).

Regarding claims 13 and 15, Miki et al. disclose all the subject matter of the claimed invention with the exception of the memory stores a sequence for generating L2TP tunnels and a sequence for terminating the L2TP tunnels corresponding to received packets, and the processor reads and executes any of the sequences to realize the LAC function and LNS function; the processor has a setting means for determining which of the sequences is to be read, and switches between the LAC function and the LNS function by the setting means.

Forslow from the same or similar fields of endeavor teaches the use of packet's sequence number to protect against replay attacks (**see Forslow paragraph 158**). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the packet's sequence number as taught by Forslow in packet switching apparatus of Miki et al. in order to provide protection against replay attacks and long term protection (**see Forslow paragraph 158**).

Allowable Subject Matter

10. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Beser et al. (US6754622) disclose method for network address table maintenance in a data-over-cable system using destination reachability.

Puthiyandyil et al. (US7225236) disclose load balancing between LNSS using virtual LNS with minimal LAC configuration.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wutchung Chu whose telephone number is 571 270 1411. The examiner can normally be reached on Monday - Friday 1000 - 1500EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on 571 272 7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/WC/
Wutchung Chu

EDAN ORGAD
PRIMARY PATENT EXAMINER

Edan Orgad 7/7/07